



Grain Inspection,
Packers and Stockyards Administration
Federal Grain Inspection Service

Farm Gate Assessment: U.S. Sorghum Quality

February 2009





Federal Grain Inspection Service

The U.S. Department of Agriculture's Grain Inspection, Packers and Stockyards Administration (GIPSA) facilitates the marketing of livestock, poultry, meat, cereals, oilseeds, and related agricultural products, and promotes fair and competitive trading practices for the overall benefit of consumers and American agriculture.

The Agency's Federal Grain Inspection Service (FGIS) facilitates the marketing of U.S. grain and related agricultural products by establishing the U.S. standards for grain, rice, beans, peas, and lentils; regulating handling practices; and managing the official grain inspection and weighing system, a network of Federal, State, and private laboratories that provide impartial, user-fee funded official inspection and weighing services.

Farm Gate Assessments

In 2006, USDA's Federal Grain Inspection Service (FGIS) initiated the Sorghum Farm Gate Assessment to capture grain sorghum quality data from the producers' first-point-of-sale. This first-point-of-sale, or farm-gate, inspection data provides a baseline of grading quality that allows FGIS to better evaluate the market impact of proposed changes to the grain standards. In 2007, FGIS initiated an identical program to capture soybean farm-gate quality data. Both assessments will be conducted for a minimum of 5 years.

The Process: To collect quality data on sorghum and soybeans, FGIS contacts local grain elevators (identified via USDA/Farm Service Agency records) in sorghum- and soybean-producing States prior to the harvest of each commodity. Elevators are invited to participate by collecting and sending samples of sorghum and soybeans to a designated USDA official grain inspection service provider. Each year, thousands of freshly harvested sorghum and soybean samples are analyzed and become part of the quality database.

Data Collected: Each sample is graded, including all grade-determining and some non grade-determining factors (i.e., moisture for both; test weight, oil, and protein for soybeans; dockage for sorghum). Farm gate samples are analyzed for some additional factors as well. The sorghum and soybean assessments include a compositional analysis (quantification and characterization) of the foreign material (FM). The sorghum assessment also includes a detailed analysis of damaged other grains, including corn, soybeans, and wheat.

Sorghum Farm Gate Assessment

United States Standards for Sorghum

Grade	Minimum Limits of -		Maximum Limits of -			
	Test weight per bushel (pounds)	Damaged Kernels		Broken Kernels and foreign material		Total (percent)
		Heat (percent)	Total (percent)	Foreign material (part of total) (percent)		
U.S. No. 1	57.0	0.2	2.0	1.0	3.0	
U.S. No. 2	55.0	0.5	5.0	2.0	6.0	
U.S. No. 3 1/	53.0	1.0	10.0	3.0	8.0	
U.S. No. 4	51.0	3.0	15.0	4.0	10.0	

U.S. Sample Grade:

U.S. Sample Grade is sorghum that:

- (a) Does not meet the requirements for grades U.S. No. 1, 2, 3, or 4; or
- (b) Contains 8 or more stones which have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (*Crotalaria spp.*), 2 or more castor beans (*Ricinus communis L.*), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cockleburs (*Xanthium spp.*) or similar seeds singly or in combination, 10 or more rodent pellets, bird droppings, or an equivalent quantity of other animal filth in 1,000 grams of sorghum, 11 or more pieces of other material from any combination of animal filth, castor beans, crotalaria seeds, glass, stones, unknown foreign substances, and cockleburs, or
- (c) Has a musty, sour, or commercially objectionable foreign odor (except smut odor); or
- (d) Is badly weathered, heating or otherwise of distinctly low quality.

1/ Sorghum which is distinctly discolored shall not grade any higher than U.S. No. 3.

Summary Data

Summary of All States	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	57.6	13.9	0.0	0.4	0.9	2.7
	Min	0.0	32.0	7.6	0.0	0.0	0.0	0.0
	Max	5.2	62.7	21.9	0.2	22.2	26.2	32.7
2007	Average	0.1	58.9	13.9	0.0	1.5	0.8	2.4
	Min	0.0	40.3	4.5	0.0	0.0	0.0	0.0
	Max	6.8	63.0	21.0	1.0	52.7	5.1	19.9
2008	Average	0.1	58.4	14.6	0.0	0.5	0.7	2.4
	Min	0.0	44.1	9.4	0.0	0.0	0.1	0.2
	Max	2.3	62.6	21.0	0.0	59.8	5.1	15.3
3-Yr Avg	Average	0.1	58.3	14.1	0.0	0.8	0.8	2.5
	Min	0.0	32.0	4.5	0.0	0.0	0.0	0.0
	Max	6.8	63.0	21.9	1.0	59.8	26.2	32.7

Sorghum Farm Gate Assessment

ARKANSAS	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	57.5	14.0	0.0	0.2	0.6	2.5
	Min	0.0	55.3	13.2	0.0	0.0	0.2	0.8
	Max	0.2	59.7	15.3	0.0	0.7	1.4	5.7
2007	Average	0.1	58.4	13.8	0.0	0.3	0.7	2.5
	Min	0.0	54.1	11.9	0.0	0.0	0.1	0.6
	Max	0.5	61.6	17.1	0.0	2.8	1.8	6.2
2008	Average	0.1	57.6	14.8	0.0	10.4	0.6	2.2
	Min	0.0	51.5	11.7	0.0	0.0	0.2	0.6
	Max	0.3	61.0	17.6	0.0	59.8	1.2	7.3
3-Yr Avg	Average	0.1	57.8	14.2	0.0	3.6	0.6	2.4
	Min	0.0	51.5	11.7	0.0	0.0	0.1	0.6
	Max	0.5	61.6	17.6	0.0	59.8	1.8	7.3

ARIZONA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average							0
	Min							
	Max							
2007	Average	0.1	59.2	10.2	0.0	0.1	0.7	2.0
	Min	0.0	57.2	9.1	0.0	0.0	0.2	0.4
	Max	0.1	60.3	11.7	0.0	0.3	1.1	3.6
2008	Average	0.0	57.7	14.2	0.0	0.0	1.2	1.5
	Min	0.0	53.7	14.1	0.0	0.0	0.7	1.1
	Max	0.1	59.9	14.3	0.0	0.0	2.3	2.4
2-Yr Avg	Average	0.1	58.4	12.2	0.0	0.1	1.0	1.8
	Min	0.0	53.7	9.1	0.0	0.0	0.2	0.4
	Max	0.1	60.3	14.3	0.0	0.3	2.3	3.6

CALIFORNIA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average							0
	Min							
	Max							
2007	Average	0.1	57.3	14.0	0.0	0.0	0.0	1.7
	Min	0.0	56.6	13.9	0.0	0.0	0.6	1.2
	Max	0.2	57.7	14.1	0.0	0.0	1.6	2.2
2008	Average							0
	Min							
	Max							
1-Yr Avg	Average	0.1	57.3	14.0	0.0	0.0	0.0	1.7
	Min	0.0	56.6	13.9	0.0	0.0	0.6	1.2
	Max	0.2	57.7	14.1	0.0	0.0	1.6	2.2

Sorghum Farm Gate Assessment

COLORADO	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	53.0	12.8	0.0	0.1	2.4	5.3
	Min	0.0	43.1	11.2	0.0	0.0	0.5	2.8
	Max	0.2	60.2	14.4	0.0	0.3	8.9	10.4
2007	Average	0.2	59.4	11.3	0.0	0.1	0.6	2.8
	Min	0.0	56.6	8.3	0.0	0.0	0.2	1.0
	Max	0.9	61.8	13.7	0.0	0.3	1.5	6.2
2008	Average	0.2	56.6	12.3	0.0	0.0	0.8	3.2
	Min	0.0	54.6	11.0	0.0	0.0	0.5	1.7
	Max	0.8	59.2	13.7	0.0	0.0	1.2	7.0
3-Yr Avg	Average	0.2	56.3	12.1	0.0	0.1	1.3	3.8
	Min	0.0	43.1	8.3	0.0	0.0	0.2	1.0
	Max	0.9	61.8	14.4	0.0	0.3	8.9	10.4

GEORGIA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average							0
	Min							
	Max							
2007	Average	0.1	59.8	13.3	0.0	0.5	0.7	1.8
	Min	0.0	50.6	12.2	0.0	0.0	0.5	0.8
	Max	0.1	61.8	14.7	0.0	2.7	1.1	2.8
2008	Average							0
	Min							
	Max							
1-Yr Avg	Average	0.1	59.8	13.3	0.0	0.5	0.7	1.8
	Min	0.0	50.6	12.2	0.0	0.0	0.5	0.8
	Max	0.1	61.8	14.7	0.0	2.7	1.1	2.8

ILLINOIS	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	59.3	15.4	0.0	0.3	0.9	3.1
	Min	0.0	55.4	12.8	0.0	0.0	0.3	0.6
	Max	1.2	61.0	18.1	0.0	1.4	3.1	10.8
2007	Average	0.1	58.6	14.6	0.0	0.1	0.7	3.6
	Min	0.0	54.4	12.2	0.0	0.0	0.0	0.0
	Max	0.5	61.0	20.6	0.0	0.7	2.1	8.2
2008	Average	0.1	58.5	15.6	0.0	0.0	0.9	2.2
	Min	0.0	55.5	12.4	0.0	0.0	0.3	1.0
	Max	0.4	60.7	19.7	0.0	0.0	2.2	5.3
3-Yr Avg	Average	0.1	58.8	15.2	0.0	0.1	0.8	3.0
	Min	0.0	54.4	12.2	0.0	0.0	0.0	0.0
	Max	1.2	61.0	20.6	0.0	1.4	3.1	10.8

Sorghum Farm Gate Assessment

KANSAS	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	58.0	14.3	0.0	0.2	0.8	2.4
	Min	0.0	37.4	9.5	0.0	0.0	0.0	0.2
	Max	5.2	62.7	21.9	0.2	2.7	7.9	19.3
2007	Average	0.1	59.5	14.0	0.0	0.1	0.7	2.3
	Min	0.0	40.3	4.5	0.0	0.0	0.0	0.0
	Max	3.0	62.8	21.0	1.0	12.2	3.5	19.9
2008	Average	0.1	58.7	14.6	0.0	0.0	0.7	2.4
	Min	0.0	47.6	11.1	0.0	0.0	0.1	0.2
	Max	1.4	62.6	18.1	0.0	2.2	3.4	12.4
3-Yr Avg	Average	0.1	58.7	14.3	0.0	0.1	0.7	2.4
	Min	0.0	37.4	4.5	0.0	0.0	0.0	0.0
	Max	5.2	62.8	21.9	1.0	12.2	7.9	19.9

KENTUCKY	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average							0
	Min							
	Max							
2007	Average	0.1	57.8	13.7	0.0	0.2	0.6	1.2
	Min	0.0	55.0	12.6	0.0	0.0	0.3	0.6
	Max	0.1	59.7	14.9	0.0	1.4	1.1	1.7
2008	Average							0
	Min							
	Max							
1-Yr Avg	Average	0.1	57.8	13.7	0.0	0.2	0.6	1.2
	Min	0.0	55.0	12.6	0.0	0.0	0.3	0.6
	Max	0.1	59.7	14.9	0.0	1.4	1.1	1.7

LOUISIANA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.2	57.4	13.5	0.0	1.5	0.8	3.9
	Min	0.0	52.5	11.4	0.0	0.0	0.2	1.0
	Max	0.9	60.5	15.6	0.1	9.6	1.6	8.4
2007	Average	0.1	56.4	13.8	0.0	2.2	1.1	4.1
	Min	0.0	49.7	11.3	0.0	0.0	0.5	1.1
	Max	0.6	59.6	16.5	0.0	14.3	4.3	13.9
2008	Average	0.1	58.7	14.9	0.0	1.0	0.8	2.0
	Min	0.0	53.4	12.3	0.0	0.0	0.2	0.4
	Max	0.6	62.0	19.5	0.0	23.8	3.0	8.4
3-Yr Avg	Average	0.1	57.5	14.1	0.0	1.6	0.9	3.4
	Min	0.0	49.7	11.3	0.0	0.0	0.2	0.4
	Max	0.9	62.0	19.5	0.1	23.8	4.3	13.9

Sorghum Farm Gate Assessment

MISSOURI	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	59.1	14.6	0.0	0.1	0.5	2.0
	Min	0.0	56.2	12.0	0.0	0.0	0.1	0.3
	Max	0.5	61.5	19.1	0.0	1.4	1.5	5.8
2007	Average	0.1	59.3	14.4	0.0	0.1	0.6	2.7
	Min	0.0	51.9	12.0	0.0	0.0	0.1	0.9
	Max	0.3	61.5	18.2	0.0	0.7	2.2	6.3
2008	Average	0.1	56.9	15.0	0.0	0.1	2.5	5.8
	Min	0.0	51.8	12.3	0.0	0.0	0.5	1.2
	Max	0.3	60.1	16.0	0.0	0.5	5.1	13.5
3-Yr Avg	Average	0.1	58.4	14.7	0.0	0.1	1.2	3.5
	Min	0.0	51.8	12.0	0.0	0.0	0.1	0.3
	Max	0.5	61.5	19.1	0.0	1.4	5.1	13.5

MISSISSIPPI	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.2	60.5	13.7	0.0	0.0	0.2	0.8
	Min	0.1	60.3	13.5	0.0	0.0	0.1	0.7
	Max	0.2	60.6	13.9	0.0	0.0	0.3	0.8
2007	Average	0.0	58.5	10.9	0.0	0.0	0.6	1.3
	Min	0.0	58.5	10.9	0.0	0.0	0.6	1.3
	Max	0.0	58.5	10.9	0.0	0.0	0.6	1.3
2008	Average							
	Min			No Samples Returned				
	Max							
2-Yr Avg	Average	0.1	59.5	12.3	0.0	0.0	0.4	1.1
	Min	0.0	58.5	10.9	0.0	0.0	0.1	0.7
	Max	0.2	60.6	13.9	0.0	0.0	0.6	1.3

NEBRASKA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.0	59.2	14.8	0.0	0.1	0.6	2.0
	Min	0.0	55.6	12.3	0.0	0.0	0.0	0.4
	Max	0.2	61.9	20.2	0.0	1.3	1.7	8.0
2007	Average	0.0	58.8	14.1	0.0	0.1	1.0	2.7
	Min	0.0	51.4	11.8	0.0	0.0	0.0	0.0
	Max	0.2	61.7	18.9	0.0	0.8	3.9	7.3
2008	Average	0.0	57.7	15.3	0.0	0.0	1.0	2.4
	Min	0.0	53.6	13.4	0.0	0.0	0.2	0.7
	Max	0.1	60.9	18.6	0.0	0.0	3.2	6.5
3-Yr Avg	Average	0.0	58.5	14.7	0.0	0.1	0.9	2.4
	Min	0.0	51.4	11.8	0.0	0.0	0.0	0.0
	Max	0.2	61.9	20.2	0.0	1.3	3.9	8.0

Sorghum Farm Gate Assessment

NEVADA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average							0
	Min							
	Max							
2007	Average	0.5	58.6	10.5	0.0	0.0	1.3	18
	Min	0.0	50.5	8.4	0.0	0.0	0.1	
	Max	6.8	61.6	12.5	0.0	0.2	5.1	
2008	Average							0
	Min							
	Max							
1-Yr Avg	Average	0.5	58.6	10.5	0.0	0.0	1.3	3.9
	Min	0.0	50.5	8.4	0.0	0.0	0.1	
	Max	6.8	61.6	12.5	0.0	0.2	5.1	

NEW MEXICO	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average							0
	Min							
	Max							
2007	Average							0
	Min							
	Max							
2008	Average	0.0	57.8	11.1	0.0	0.0	0.6	4
	Min	0.0	55.7	10.9	0.0	0.0	0.2	
	Max	0.0	59.9	11.5	0.0	0.0	1.4	
1-Yr Avg	Average	0.0	57.8	11.1	0.0	0.0	0.6	3.1
	Min	0.0	55.7	10.9	0.0	0.0	0.2	
	Max	0.0	59.9	11.5	0.0	0.0	1.4	

OKLAHOMA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	58.5	13.8	0.0	0.2	0.7	44
	Min	0.0	52.2	9.9	0.0	0.0	0.2	
	Max	0.8	60.9	18.4	0.0	2.6	4.1	
2007	Average	0.1	59.1	13.4	0.0	0.0	0.7	16
	Min	0.0	57.6	12.2	0.0	0.0	0.2	
	Max	0.3	61.1	15.6	0.0	0.1	1.2	
2008	Average	0.3	54.6	12.4	0.0	0.0	0.9	28
	Min	0.0	44.1	9.4	0.0	0.0	0.1	
	Max	0.9	61.1	14.4	0.0	1.3	2.2	
3-Yr Avg	Average	0.2	57.4	13.2	0.0	0.1	0.8	3.1
	Min	0.0	44.1	9.4	0.0	0.0	0.1	
	Max	0.9	61.1	18.4	0.0	2.6	4.1	

Sorghum Farm Gate Assessment

SOUTH DAKOTA	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.2	58.3	13.2	0.0	0.2	0.5	4.0
	Min	0.0	54.3	10.0	0.0	0.0	0.1	0.3
	Max	1.7	61.4	16.9	0.1	0.5	1.7	16.8
2007	Average	0.1	59.4	14.0	0.0	0.1	0.8	2.5
	Min	0.0	56.7	12.2	0.0	0.0	0.3	0.5
	Max	1.0	60.5	16.2	0.0	0.4	1.7	5.4
2008	Average	0.1	54.8	17.6	0.0	0.0	1.0	4.6
	Min	0.0	53.3	15.9	0.0	0.0	0.9	0.5
	Max	0.2	56.0	19.4	0.0	0.0	1.2	15.3
3-Yr Avg	Average	0.2	57.5	14.9	0.0	0.1	0.8	3.7
	Min	0.0	53.3	10.0	0.0	0.0	0.1	0.3
	Max	1.7	61.4	19.4	0.1	0.5	1.7	16.8

TENNESSEE	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average							0
	Min							
	Max							
2007	Average	0.0	56.0	13.3	0.0	8.0	1.0	3.3
	Min	0.0	52.5	12.5	0.0	0.5	0.5	0.9
	Max	0.1	58.2	13.8	0.0	16.2	1.6	5.2
2008	Average							0
	Min							
	Max							
1-Yr Avg	Average	0.0	56.0	13.3	0.0	8.0	1.0	3.3
	Min	0.0	52.5	12.5	0.0	0.5	0.5	0.9
	Max	0.1	58.2	13.8	0.0	16.2	1.6	5.2

TEXAS	Dockage	Test Wt. lb/bu	Moisture	--- Damage ---		Brkn Kernels & Foreign Mat.		No. of Samples
				Heat, %	Total, %	FM, %	BNFM, %	
2006	Average	0.1	56.1	12.8	0.0	0.7	1.0	3.3
	Min	0.0	32.0	7.6	0.0	0.0	0.0	264
	Max	2.0	62.2	19.8	0.1	22.2	26.2	32.7
2007	Average	0.1	58.1	14.1	0.0	5.9	0.7	2.2
	Min	0.0	45.0	8.8	0.0	0.0	0.0	235
	Max	1.3	63.0	20.6	0.0	52.7	3.3	10.6
2008	Average	0.1	59.0	14.5	0.0	0.1	0.6	2.1
	Min	0.0	49.0	9.7	0.0	0.0	0.1	0.4
	Max	2.3	62.4	21.0	0.0	0.9	2.8	8.1
3-Yr Avg	Average	0.1	57.7	13.8	0.0	2.3	0.8	2.5
	Min	0.0	32.0	7.6	0.0	0.0	0.0	0.0
	Max	2.3	63.0	21.0	0.1	52.7	26.2	32.7